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ABSTRACT

The study investigates whether procrastination in Personalized System of Instruction (PSI) can be alleviated by two behavior-modification techniques. The efficacy of oral urging with praise by the proctor and a point reward for the early completion of units in reducing student procrastination behavior in two PSI psychology courses are examined. In the first experiment 48 students in an introductory PSI psychology course were divided into four groups. Two served as experimental groups which received periodic urging with praise and two as control groups which received no urging. In a second course, 55 students were allowed to earn 10 extra points if they finished a unit on time. However, the practice was stopped in the sixth week and reinstated in the ninth week in order to check its effect on students' behavior. The results of both experiments indicated that procrastinating behavior can be modified by either of the two behavior-modification techniques. In both experiments the percentage of procrastination was reduced from over 90 percent to between 17 and 30 percent. (Author/DE)

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Modification of Procrastinating Behavior in Personalized System of Instruction

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Abstract

Procrastination is a common problem in PSI. The present study was designed to find whether this problem can be alleviated by the behavior modification techniques. Urging and point system were selected as two reinforcing contingencies. In an introductory-psychology PSI course, four groups were formed at random to study under four proctors. Two served as experimental groups which received periodic urgings with praises and two as control groups which received no urgings. In another developmental-psychology PSI course, after the first week when the baseline data were collected, students were allowed to earn 10 extra points if they finish a unit on time. However, the practice was stopped in the sixth week and reinstated in the nineth week in order to check its effect on students behavior. The results of both experiments show that procrastinating behavior can be modified by appropriate contingency management.

Modification of Procrastinating Behavior in Personalized System of Instruction

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Procrastination is a postponement of study until a later time. Since self-pacing is a major feature of Personalized System of Instruction, procrastination is an almost inevitable phenomenon of this program. In Sherman (1974)'s collection of seven "germinal papers" pertaining to the "problems" of PSI, six (85.71%) of them have a mention of procrastination. In a three-year project attempting to answer nine important questions about PSI, procrastination was one of them (Stice, 1975).

Various ways have been suggested or tried to alleviate this problem, such as "doomsday contingency"--setting a deadline and punishment, rewarding early completion, limiting units of completion in later weeks (Gallup, 1974), letting students learn self-control (Sherman, 1974), being hard-hearted--tightening admission policy (Green, 1974), instituting a minimum rate of progress, keeping a cumulative record of progress, "use of

an early one-shot time contingency"--setting a date to finish certain units or for counseling, instructing proctors to contact procrastinators, scheduling the final examination at different times (Hess, 1974), requiring class attendance for certain times (Roth, 1973), lowering grade for missing units, reducing the amount of course material, extending testing-and-grading sessions, reducing the number of credits without reducing the grade, reevaluating the purpose and procedures of a course of study (Keller & Sherman, 1974), explaining PSI clearly, distributing unit material adequately, using feedbacks to revise program (Stice, 1975), etc. Some of these have produced good results; others are somewhat contradictory to the self-pacing spirit of the Keller Plan.

In recent years, behavior modification techniques have been used to change behavior in almost any fields (Goodall, 1972), especially in the school classroom situations (Williams & Anandam, 1973; Lu, Note 3). The purpose of the present study was to test the efficacies of two techniques in changing procrastinating behavior; namely, an oral urging with praise by the proctor and a point reward for the early completion of units.

Verbal reinforcement had been proved to be effective

in eliciting responses (Verplanck, 1955) or Shaping behavior (Maltzman, 1960; Goetz & Baer, 1971). There are also evidences that a point system, with or without backup rewards, is effective in increasing student appropriate behaviors (Williams & Anandam, 1973, pp. 56-57; Jessee, Note 1). It was hypothesized that procrastination as an inappropriate behavior could be modified by similar techniques.

Experiment 1

Subjects

Forty-eight students enrolled in an introductory psychology class served as subjects. They were first given an opportunity to choose their own proctors. When a proctor had too many students or another had too few, the instructor advised some students to change so that each proctor had equal number of students. Thus, four groups were randomly formed: Groups A, B, C, D with 12 students in each. Groups A and B served as experimental groups and Groups C and D as control groups. There were four proctors: two senior psychology majors, one senior biology major and one sophomore psychology major. The textbook used was an individualized learning material published by the Individual Learning Systems, Inc. (Speeth & Tosti, 1973). However, we only used the

first ten units.

Procedure

The experiment was made in the Fall Quarter, 1975, which lasted about 10 weeks. All students were given a pretest (Course Test, Form C, from ILS) on the first day. The same test was administered again when a student has finished his study.

During the first two sessions, only five students had shown up. So the proctors of groups A and B were instructed to urge their students (by sending notices or through personal contacts) to come and when they came give them some praise words and warm welcome such as: "You're a good student!" "How nice to see you back!" "You come very regularly!" "You're very fast!" When they left, said to them: "Be sure come next Tuesday (or Thursday)!" "Don't forget your study!" "Continue to come!" On the other hand, in Groups C and D neither the proctors nor the students were told anything except the routines.

However, starting from the sixth session the urging and praise were stopped for two sessions. In the eighth session, they were given again till the end of the term.

Results

All proctors were asked to keep records of students

who came to take test. The recording started from the second class session because the first meeting was preparatory; i.e., to explain procedures, give assignments, arrange proctors, etc. Since there were ten units to complete and there were two class sessions in each week, the earliest possible time to finish the course was the sixth week or the eleventh session. Thus, procrastination in this course was defined as postponement of taking tests during this period. A procrastination rate, which was calculated by dividing the number of absentees in a session into the total number of students in a group, was used to describe the fluctuation of procrastination during the experiment.

The results are shown in the following figures. Figure 1 indicates that in the experimental groups pro-

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Insert Figures 1 and 2 about here

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crastination decreased from 100% (Group A) and 92% (Group B) in the second session to 25% and 17% in the eleventh session as the verbal reinforcements (urging and praise) were delivered. On the other hand, it went up again once the reinforcements were stopped. Figure 2 provides additional evidence by checking the control groups (Groups

C and D) which had little changes in procrastination rate during the six-week period.

Furthermore, a comparison of the mean differences between pretest and posttest also shows that the experimental groups gained more scores than the control groups, as seen in Table 1 below:

Insert Table 1 about here

Experiment 2

Subjects

The subjects in this experiment were 55 students registered in the PSI section of a Developmental Psychology class offered in the Winter Quarter of 1976. Most of them were sophomores with a major in Nursing or Education. Five Psychology students (three seniors and two juniors) served as proctors under an arrangement to receive extra credits in Psychology. Each proctor took care of 11 students who either made their own choice in selecting the proctor or were randomly assigned to a proctor for the purpose of equalizing the proctors' loads.

Procedure

This was the second time to offer a PSI section in Developmental Psychology here at Lincoln Memorial Univer-

sity. All teaching procedures were the same as those of the first time (Lu, Note 2). After a week in operation when the baseline data of procrastinators were collected, it was announced that in order to encourage the completion of course on time those who came to take and pass a unit test during the first month (four weeks) would receive 10 extra points toward their credits for grades.

The proctors were instructed to keep a record of testing dates for each student so that the percentage of students completing and incompleting units for the entire class in each week could be computed. The class percentage of incompletion was used as a measurement of procrastination (this was calculated by subtracting the completion percentage from 100 percent).

As had been announced, no extra points were awarded after the fifth week. Three weeks later, however, the point award was given again for the remaining two weeks.

Results

The cumulative incompletion data, as illustrated in Figure 3, shows that the point system did cause the pro-

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Insert Figure 3 about here

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crastination curve to decline. At beginning (the baseline

phase), there were 97% of students who did not come to take test. During the second phase of point reinforcement, this percentage decreased steadily to a 30% level. Then the withdrawal of reinforcements (the third phase) also held back the decreasing tendency until the points were rewarded again (the fourth phase) which further reduced the percentage of procrastinators to a 19% level. This represents 10 students who finally did not complete and fail the course.

Discussion

The results of the above two experiments prove the earlier hypothesis that procrastination in personalized system of instruction can be improved by the behavior modification techniques. In the first experiment, urging can be seen not only as a reinforcement after an inappropriate behavior (procrastination) but also as a personal persuasion before the next behavior occurs. Additional praise is spiritual reinforcement contingent on an appropriate behavior (studying and coming to take test). In the PSI course, these reinforcers are delivered personally and more frequently and hence more effective. This has analogy to a personal letter which is more welcomed by the receiver and thus more effective.

The finding that non-procrastinators made more progress than the procrastinators verifies a similar conclusion in Stice's Report (1975, p. 40). This is one important reason why procrastinating behavior should be modified.

But one problem still exists; namely, it is difficult to deliver the reinforcer when the class attendance is not required as in the case of PSI. It is especially difficult if the procrastinator has never shown up since the registration time. To solve this problem a requirement for students to attend several beginning classes may be necessary. But anything like this will inevitably involve some coercion that is usually not desired in the PSI program.

In the second experiment, extra points are secondary reinforcer or a quasi tangible token. Their potency is high because almost all students like a higher grade (it is a primary reinforcer in a course of study), and points will help in getting it. However, an overemphasis on points or grades may distort the student perception of learning. He may treat tokens (points) as primary objective for study and forget the original purpose of learning. This is an issue involving the whole school system and society.

Fortunately, most reinforcers have saturation effect. As Figure 3 shows, the point awards in the fourth phase were not as effective as in the second phase. Of course, one reason may be that it was near the end of the term and all students wanted to come to finish their course regardless of extrinsic rewards. But another reason could be that after so many times of deliveries, the tokens were not as attractive or powerful as before.

Although this might have been a variable which weakened the expected ABAB results, it should be remembered that procrastination by definition is concerned with the earlier stage of postponing study. Trouble seldom arises during the later part of study (Keller, 1973, p. 7). This implies that early attention is needed. Once getting started, a study habit tends to form and the problem, if any, will be much easier to handle.

There was a common unavoidable weakness in both experiments. That is, the time shortage in the quarterly operated courses. Especially, the classes met only two times (Tuesday and Thursday) a week. Totally, there were only 20 opportunities (sessions), with long and uneven intervals in between, for giving reinforcements. When students procrastinated for some weeks, there were not too much time left for corrective action or for experimental

manipulation.

On the whole, component analyses (Ruskin, 1974, pp. 31-32) seem to be a good theme in today's research on PSI. Since self-pacing is one significant component and procrastination is a serious problem in self-pacing (Keller, 1973, p.6), it is obvious that more studies are needed this area.

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Table 1

The Differences of Course Test Score between Experimental and Control Groups

Group[a]	Pretest (mean)	Posttest (mean)	Difference[b]
Experimental			
A	38.4	64.8	26.4
B	41.8	67.3	25.5
Mean	40.1	66.1	26.0
Control			
C	39.2	52.4	13.2
D	42.4	60.5	18.1
Mean	40.8	56.5	15.7

[a] $n=12$ for each group

[b] $p<.05$ in each difference

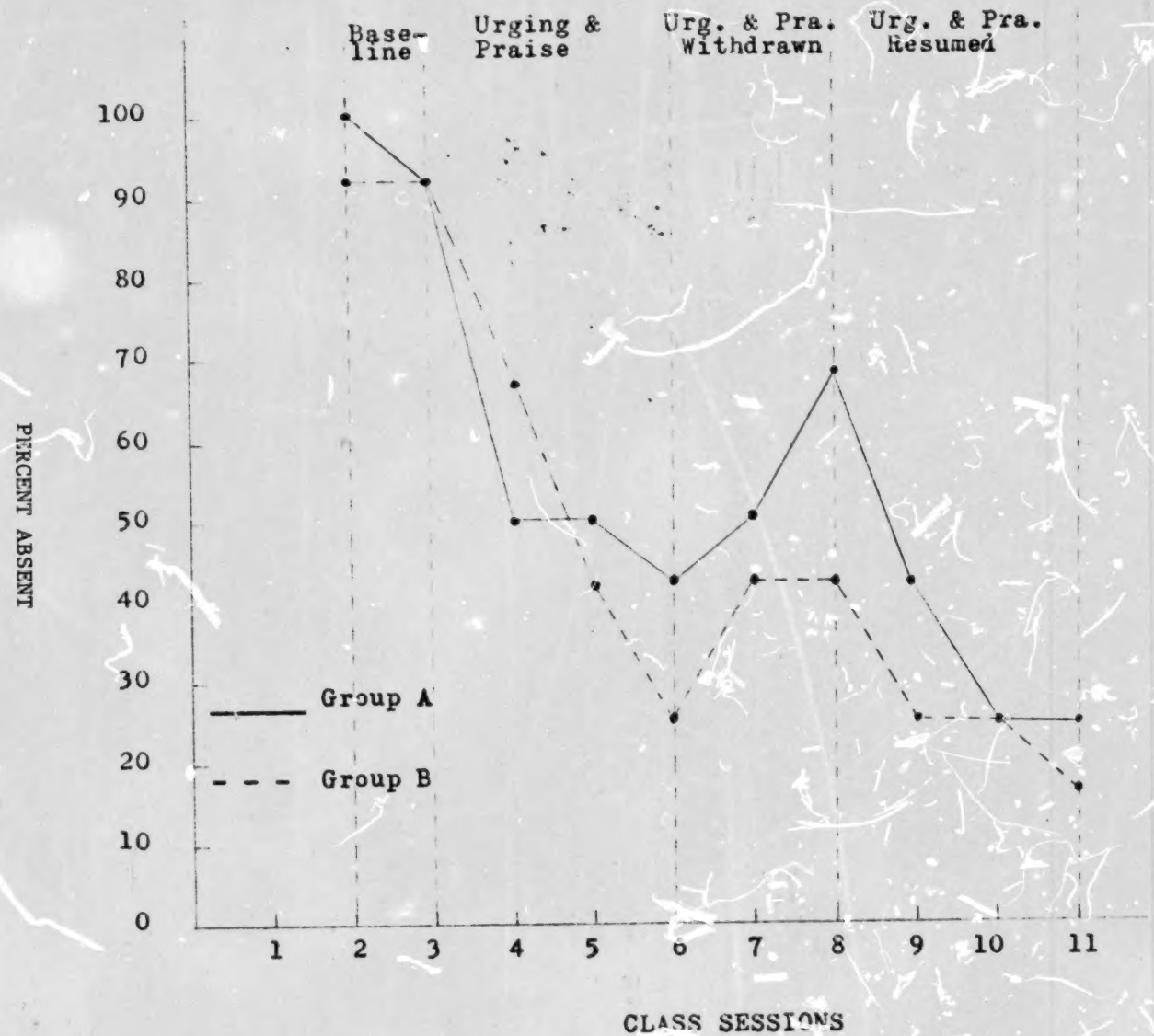

Figure 1. Reduction of procrastination by verbal reinforcement

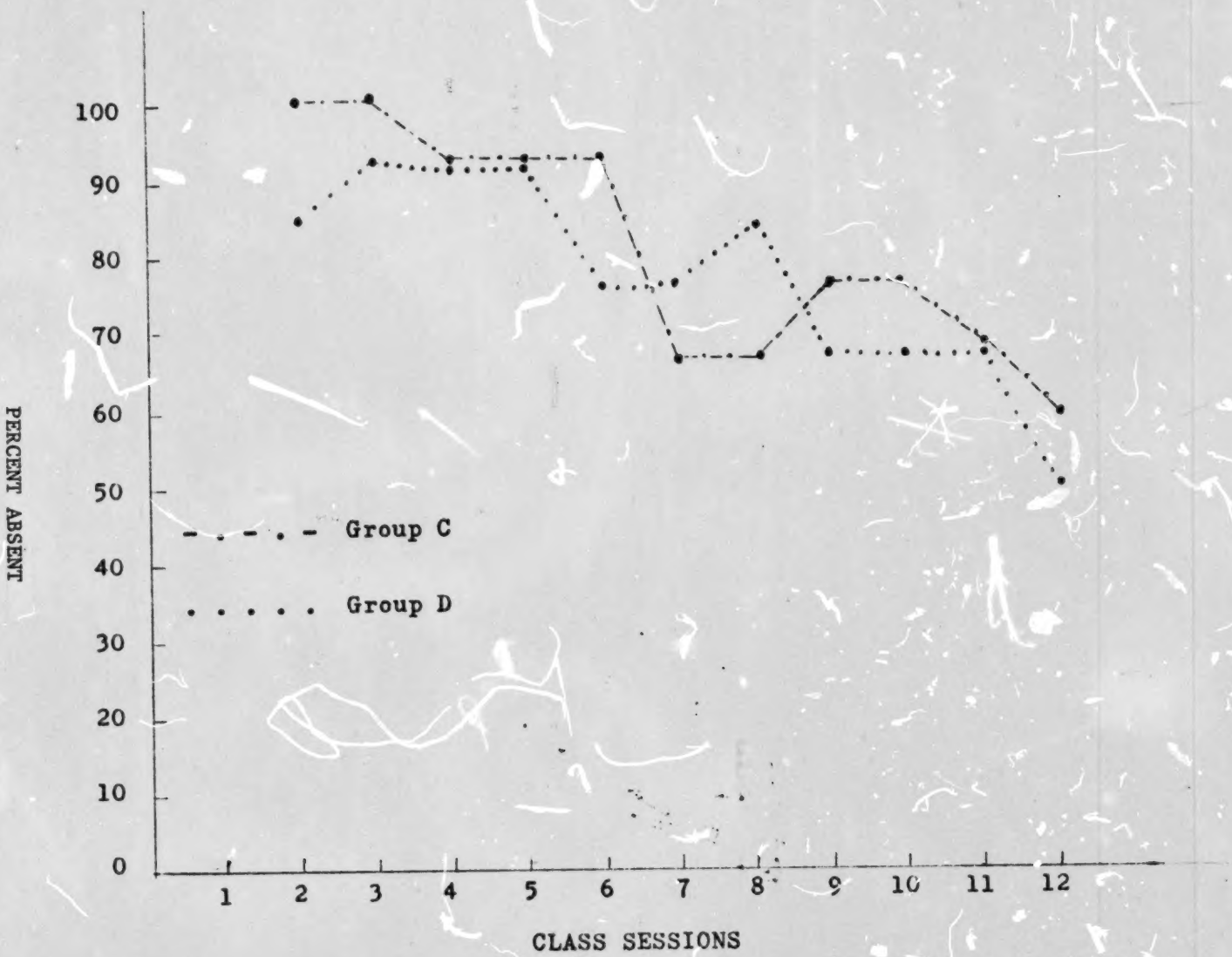

Figure 2. Procrastination rates of the control groups

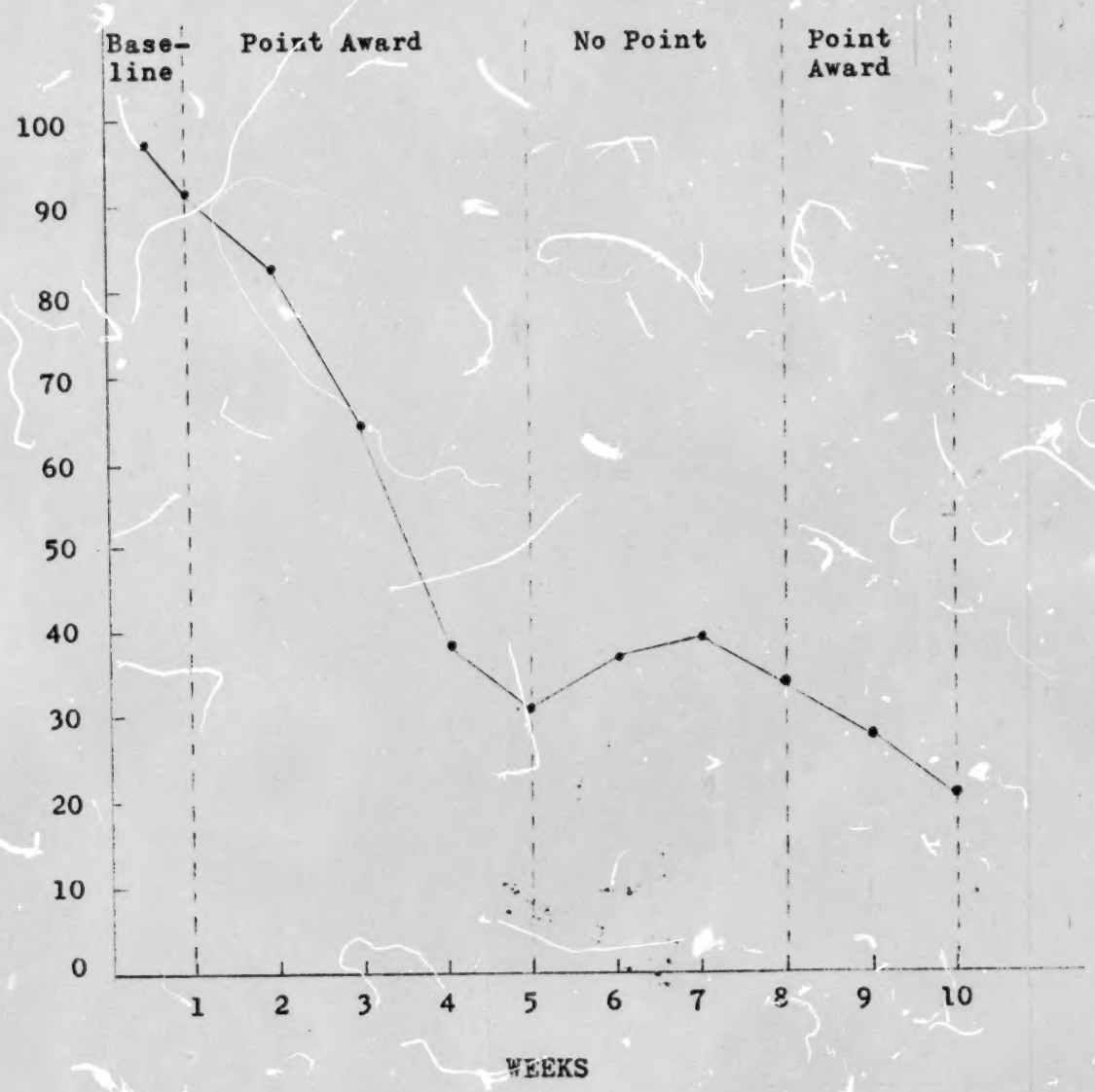

Figure 3. The effect of point system on procrastination